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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/575,052

04/02/2007

Malcolm Lambert

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DELPHI TECHNOLOGIES, INC.  
M/C 480-410-202  
PO BOX 5052  
TROY, MI 48007

EXAMINER

JONAITIS, JUSTIN M

ART UNIT

PAPER NUMBER

3752

MAIL DATE

DELIVERY MODE

08/21/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/575,052	<b>Applicant(s)</b> LAMBERT ET AL.	
	<b>Examiner</b> JUSTIN JONAITIS	<b>Art Unit</b> 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 12 is/are rejected.
- 7) ☒ Claim(s) 10 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/26/2009</u> .  | 6) <input type="checkbox"/> Other: _____                          |

Art Unit: 3752

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 10-11 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim 4. See MPEP § 608.01(n). Accordingly, the claims 10-11 have not been further treated on the merits.

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the first differential angle being greater than the second differential angle must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, 7, & 12 are rejected under 35 U.S.C. 102(a) as being anticipated by U.S. Patent #6,427,932 to Danckert et al.

In re claim 1, Danckert et al. discloses an injection nozzle comprising:

- a. A **nozzle body (valve seat (15))** with a bore defining a **valve seating surface (seal surface (16))** having a **seat cone angle ( $\alpha 1$ )**;
- b. A **valve member (Needle (11))** which is movable within the bore;
- c. Wherein the valve member includes an **upstream seat region (Top half of Transition Surface (111))** defining an **upstream cone angle ( $\alpha 3$ )**, the upstream cone angle and the seat cone angle together defining a first differential angle between them, and a **downstream seat region (lower half of sealing surface (13))** defining a **downstream cone angle ( $\alpha 2$ )**, the downstream cone angle and the seat cone angle together defining a second differential angle between them.

Art Unit: 3752

d. The valve member further having an **annular ridge protruding from the surface of the valve member (defined by the lower half of transition surface (111) and top half of sealing surface (13) which protrudes outward as the valve needle head does not have a single straight line from needle body (11) to front end section (121))** intermediate the upstream seat region and the downstream seat region, and being disposed immediately downstream of the upstream seat region, wherein the protruding annular ridge defines a seating line (point where regions meet) having a seat diameter, the seat line being engageable with the valve seating surface to control the fuel injection from the nozzle body.

In re claim 2, Danckert et al. discloses the invention as described above including the protruding annular ridge having an **upstream ridge region (Lower half of Transition surface (111))** and a **downstream ridge region (upper portion of sealing surface (13))**; The seating line being defined at the intersection between the upstream and downstream ridge regions.

In re claim 3, Danckert et al. discloses the invention as described above including the valve member having a **circumferential groove (concave curve (19))** arranged downstream of the downstream ridge region and immediately upstream of a **further region (front end section (121))** wherein a lower edge of the circumferential groove and the further region define an intersection which defines, together with the seating surface a radial clearance that is sufficiently

Art Unit: 3752

small so that a lower portion of the downstream ridge region defines a load bearing surface for the valve member.

In re claim 4, Danckert et al. discloses the invention as described above including the upstream ridge region being immediately downstream of the upstream seat region and the downstream ridge region being immediately upstream of the downstream seat region.

In re claim 5, Danckert et al. discloses the invention as described above including the **first differential angle ( $\alpha_3$ ) being less than the second differential angle ( $\alpha_2$ ).**

In re claim 7, Danckert et al. disclose the invention as described above where the first differential angle is substantially the same as the second differential angle, regardless of wear of the seating line.

In re claim 12, Danckert et al. discloses the invention as described above wherein the injector nozzle is a VCO-type.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 3752

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 6, & 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent #6,427,932 to Danckert et al.

In re claim 6m Danckert et al. discloses the invention as described above but fails to disclose the first differential angle being greater than the second differential angle.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the angle of the components different so the first differential angle was greater than the second differential angle, Since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Please note that in the instant application, applicant has not

Art Unit: 3752

disclosed any criticality for the claimed limitations as the first angle being greater, less than and equal to the second differential angle have all been claimed.

In re claim 8 & 9, Danckert et al. discloses the invention as described above including the annular ridge is shaped so that a region of the valve member adjacent thereto on a downstream side of the seating line defines a seating surface.

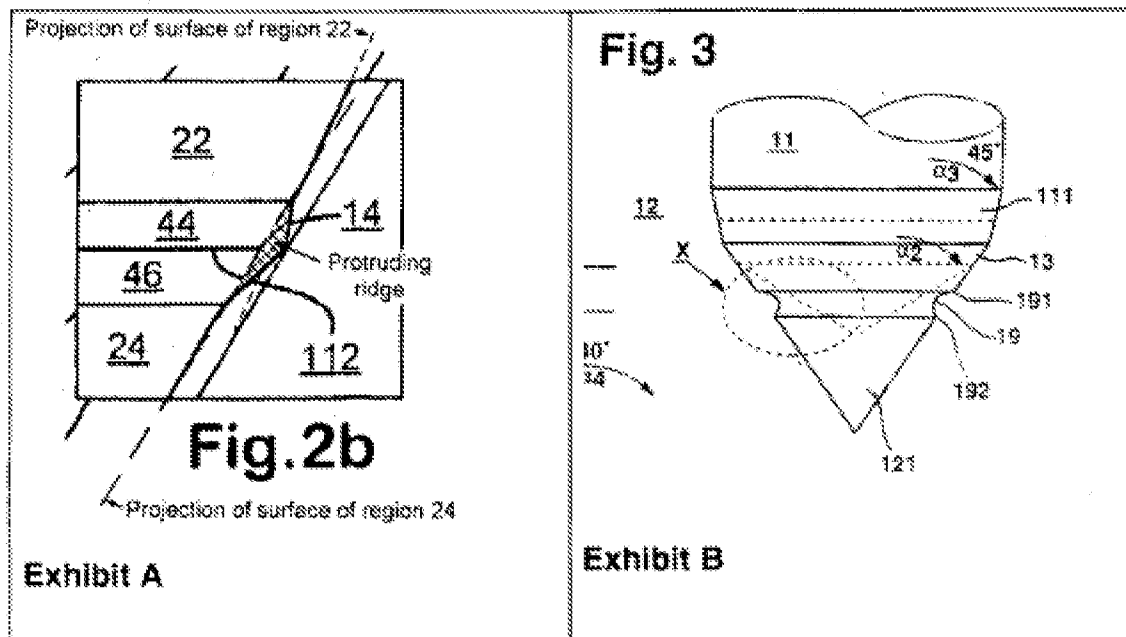
Danckert et al. fails to disclose the seating surface having a clearance of no more than 10  $\mu\text{m}$ .

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select the appropriate clearance between the valve member and the seat, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

### ***Response to Arguments***

5. Applicant's arguments filed 05/26/2009 have been fully considered but they are not persuasive.





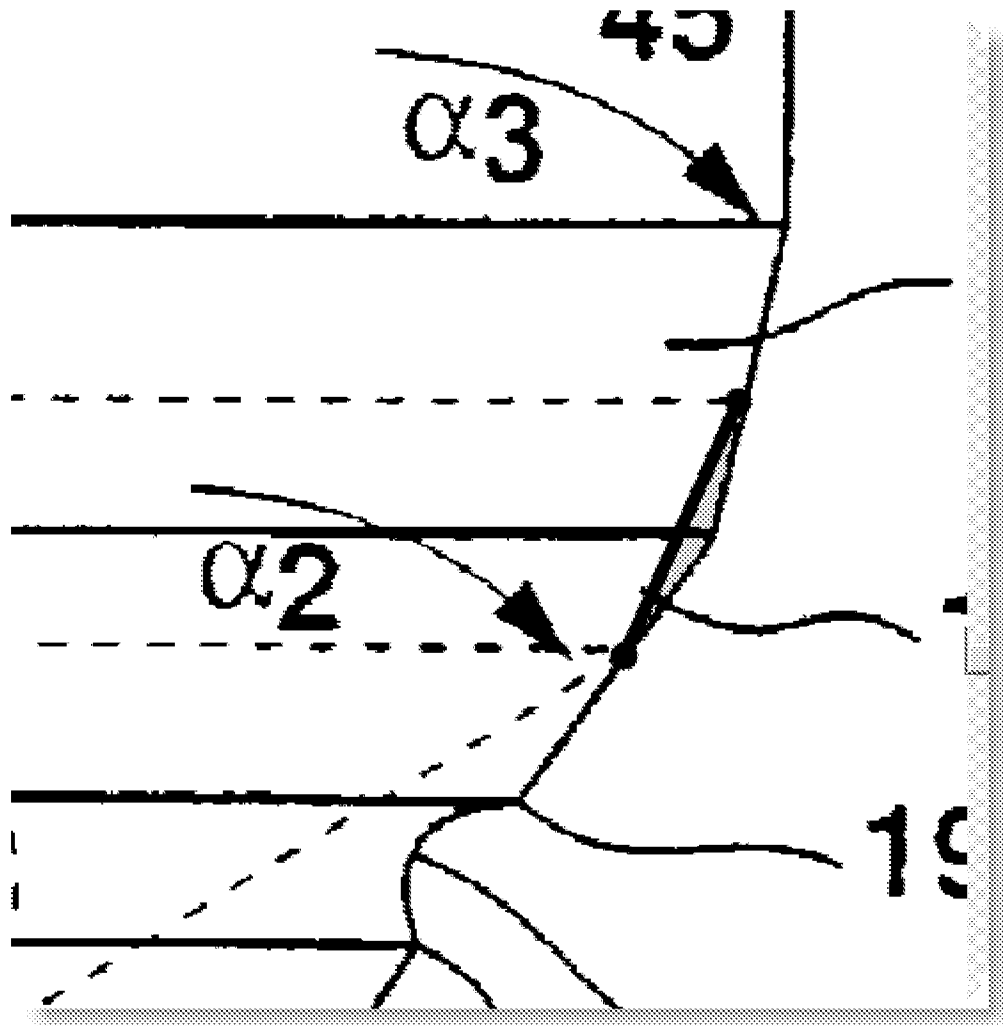
**Exhibits A and B presented by Applicant in Office Action response Filed 05/26/2009**

In regard to claims 1-4, applicant submits Exhibits A and B (see above), and states that the Danckert et al. reference's seating line is defined by the intersection of two regions and not the additional raised ridge disclosed in the applicant's Figure.

Examiner would like to point out that the seating line of the applicant's figure is provided by the intersection of two regions, which are Upstream Ridge Region (44) and Downstream Ridge Region (46) in the same manner that Danckert's lower half of the transition surface (111) and the top half of the sealing surface (13) form a seating line.

Examiner would also like to present Exhibit B in a more appropriately scaled form to compare to applicant's Exhibit A in order to clarify why the Danckert reference is not deficient in defining the protruding ridge.

Art Unit: 3752



**Exhibit B provided by Applicant appropriately Resized**

In the zoomed view of Exhibit B, a line was added to connect the outer wall of the mid section of the transition surface (111) and the seating surface (13), and the protruding portion was greyed out to more clearly define itself. Clearly it can be seen that the surfaces of Danckert disclose a protruding ridge provided by the lower half of transition surface (111) and the top half of seating surface (13) in the same manner as applicant's protruding ridge is defined by the upstream ridge region (44) and the downstream ridge region (46)

Art Unit: 3752

***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUSTIN JONAITIS whose telephone number is (571)270-5150. The examiner can normally be reached on Monday - Thurs 6:30am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571)272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3752

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JUSTIN JONAITIS/

Examiner, Art Unit 3752

/Len Tran/

Supervisory Patent Examiner, Art Unit 3752